

UTAH SAFETY BELT OBSERVATIONAL SURVEY

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INTRODUCTION

Motor vehicle crashes continue to needlessly dominate mortality records in Utah as one of the leading causes of death. They claim the lives of more than 350 people each year.

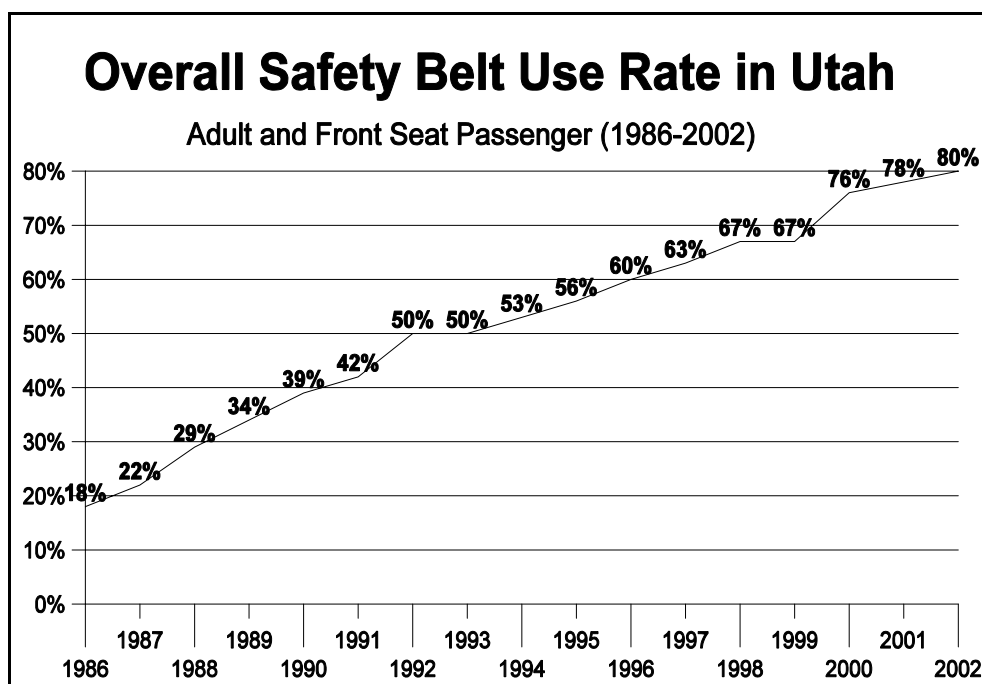
According to the National Highway Traffic Safety Administration (NHTSA), deaths and serious injuries caused by motor vehicle crashes could be reduced by approximately 50% with proper and consistent use of safety belts. To help increase safety belt use, safety advocates have used a combined approach which involves legislation, public information and education efforts and enforcement.

In 1986, the first safety belt use law was enacted in Utah and required all front seat passengers and the driver to use safety belts when they ride in a motor vehicle. Since that time the law has gone through several revisions and currently states that drivers and all passengers must use safety belts. The law is secondary for people ages 19 and older and primary for people under 19 years of age. In addition, children under the age of five must be restrained in an appropriate child safety seat.

A number of educational programs are conducted throughout the state and include school and

community presentations, media campaigns, health and safety fairs, incentive programs, safety checkpoints and high visibility enforcement activities. These activities are conducted by organizations such as the Utah Department of Health, local health departments, Safe Community programs, hospitals, law enforcement agencies and other organizations committed to making Utah's roads safer.

In an effort to measure the effectiveness of these legislative and preventative efforts, an annual survey has been conducted each year since 1986 to specifically measure safety restraint usage rates. The surveys have shown that these efforts have been effective in increasing safety belt use. Utah's safety belt usage rate has increased from 18% in 1986 to the current rate of 80.1% (Figure 1).



BACKGROUND

In 1991, the NHTSA established guidelines for conducting safety belt use surveys. These guidelines gave the states much discretion in survey design and implementation, with the stipulation that each state must generate a probability-based estimate for belt usage of front outboard occupants of passenger vehicles. In 1998, changes were made to these guidelines when the Secretary of Transportation was directed to allocate, over a 5-year period, funds to states whose safety belt use rates meet certain requirements. The allocations to states are based on savings in medical costs to the federal government because of a use rate higher than the national average or from an increase in their reported use rates. To determine this allocation, the states needed to conduct an annual safety belt use survey which meets the new minimum criteria.

The criteria directed that a state survey must be: probability based; based on observed shoulder belt use; designed to produce estimates with a relative precision of +/- 5 percent; designed to study the use rate of front seat outboard passengers of all passenger motor vehicles during all daylight hours for all days of the week; designed to include the largest geographic areas containing at least 85 percent of the state's population; and properly documented.

The survey redesign allowed Utah to establish a new baseline usage rate of 66.7% in 1998. This rate is probability based and designed to study front seat outboard passengers of all passenger motor vehicles in the largest geographic areas, in terms of population. Due to the changes in methodology, comparisons of the current usage rate with 1997 rates and previous years may be difficult.

METHODOLOGY

Sample Stratification

Utah is a unique state. The state is the eleventh largest in the United States, encompassing an area of 84,916 square miles, and the census for the year of 2000 was 2,233,169. Utah has a varied geographic distribution of its population, with large rural and frontier areas.

Over 76% of Utah's population lives within the four counties (Utah, Salt Lake, Davis and Weber Counties) clustered against the Wasatch Mountains. This leaves the remaining of the 25 counties contributing less than 24% to the state's population.

Based on national criteria to exclude no more than 15% of the state's population, the redefined state includes the 6 counties with the largest populations: Cache, Davis, Salt Lake, Utah, Washington, and Weber.

Sample Selection

Road segments were defined by data from the Utah Department of Transportation (UDOT). It was determined that there was an average of 282 road segments in each of the 6 sampled counties. Through random selection (all road segments had a probability of being selected), 27 state road segments in each county were surveyed and a total of 162 sites (27 segments per county) were observed.

The 27 road segments within each county were defined as rural or urban roadways and were randomly selected with probabilities of selection corresponding to vehicle miles traveled (VMT).

A day of week, time of day, and direction of travel were randomly selected for each road segment.

Day of Week and Time of Day

Observations were conducted every day of the week with no more than six sites being observed for 40 minutes in a single day. All time periods were during daylight hours. To minimize travel time and distance traveled, sites were grouped into geographic clusters. Observers were assigned to the sites and were provided with six time periods for observation starting at 7:30 AM and ending at 4:30 PM.

Sample Size

Based on previous observational surveys, it was estimated that approximately 15,000 observations would be acquired from the 162 sites for a single survey. This sample size results in more than the required accuracy, an approximate marginal error of less than 1%, at a 95% confidence.

Data Collection

Each of the 162 observation sites included a specific road segment using a mile post, time of day, day of week, and direction of vehicle travel. All passenger cars, pickup trucks, vans, and sport utility vehicles were observed for a period of 40 minutes at each site. Commercial trucks and motor homes were excluded. All drivers and outboard front passengers were observed. All lanes of traffic traveling in the predetermined direction of travel (N, S, E, W) were eligible for observation.

Observers were trained using a Field Observer's Instruction Manual and were provided with survey observation forms and information on each of the 162 sites to help locate the exact location to be observed.

Statistical Analysis

Completed data collection forms were returned to the UHSO where a cursory review of the forms was performed and the data was entered into an electronic format and provided to a statistician for analysis.

RESULTS

The results of this study show the overall safety belt use rate for Utah, as well as the use rate for each of the 6 counties surveyed. The use rates for female and male occupants are also provided for comparison as well as the safety belt usage rates as seen on interstates versus local roadways.

A total of **61,677** drivers and front seat passengers were observed at 162 sites in 6 counties (Cache, Davis, Salt Lake, Utah, Washington, and Weber).

Overall safety belt usage for all vehicle types was determined to be **80.1%**. This estimate has a margin of error of $\pm 0.32\%$, well within NHTSA specifications of $\pm 5\%$. This rate demonstrates an increase of 2.3% from the usage rate in 2001.

As can be seen in Table 1, all six counties surveyed increased their usage rates from 2001 to 2002. Of the six counties surveyed, Davis county had the highest percentage of safety belt use, followed by Cache, Weber, Utah, Salt Lake and Washington counties.

Table 1: Safety Belt Usage by County (2001-2002)

County	2001 Usage Rate	2002 Usage Rate	% Change
Cache	71.7%	81.2%	9.5%
Davis	81.6%	84.7%	3.1%
Salt Lake	78.4%	78.6%	0.2%
Utah	73.3%	79.1%	5.8%
Washington	76.9%	78.0%	1.1%
Weber	77.0%	80.4%	3.4%
OVERALL	77.8%	80.1%	2.3%

Gender by County

When comparing safety belt use among male and female drivers and front seat passengers, it was determined that female occupants were more likely to wear safety belts than males. Females used safety belts 85.0% of the time, whereas 77.8% of males buckled up. These results are consistent with prior studies and can be observed in each of the six counties surveyed.

The results for male and female drivers and passengers are summarized by county in Tables 2 and 3 along with the 2001 survey results for comparison.

Table 2: Male Occupants by County 2001-2002

County	2001 Rate	2002 Rate
Cache	65.4%	76.4%
Davis	79.2%	81.7%
Salt Lake	73.9%	75.1%
Utah	69.5%	75.8%
Washington	71.4%	76.0%
Weber	73.6%	78.1%
OVERALL	73.4%	77.8%

Table 3: Female Occupants by County 2001-2002		
County	2001 Rate	2002 Rate
Cache	79.3%	86.8%
Davis	84.7%	88.3%
Salt Lake	84.0%	83.2%
Utah	77.9%	83.6%
Washington	83.9%	80.8%
Weber	82.0%	83.9%
OVERALL	82.4%	85.0%

Road Type by County

When comparing safety belt use among drivers and front seat passengers on major interstates and local roadways, it was determined that more people used safety belts while traveling on major interstates when compared to local roadways. On major interstates, 85.8% of people used safety belts, whereas 76.5% of people buckle up on local roadways. These results are consistent with prior studies and can be observed in each of the six counties surveyed. The results are summarized in Table 4.

Table 4: Road Type by County - 2001		
County	Local Road	Interstate Road
Cache	81.2%	N/A
Davis	80.5%	87.1%
Salt Lake	75.0%	84.9%
Utah	73.1%	83.4%
Washington	71.3%	85.0%
Weber	73.9%	86.2%
OVERALL	76.5%	85.8%

The table does not include a use rate for interstate roads in Cache County since there is not a major interstate road in that area. All roads selected for observation in Cache County were considered to be local.

CHILD RESTRAINT USAGE

Background

The UHSO has been conducting child restraint observational studies since 1984. The ages of children observed in these studies has varied throughout the years in order to mirror changes in Utah's laws. Between 1984 and 1990, children under the age of five were observed for safety restraint use. In 1991, methodology changed to include children to age eight and in 1997 the survey was again changed to include children to age ten. Unfortunately, child restraint usage was not studied in 1998 due to time constraints.

Methodology

The NHTSA does not require states to conduct child restraint observational studies and does not provide criteria or approve methodology for conducting these studies. To ensure the results are accurate, the UHSO chose to follow the safety belt use survey guidelines established by NHTSA in 1998. A summary of the child restraint survey methodology is provided below.

- Children ages 0-10 years were observed for child restraint use in Cache, Davis, Salt Lake, Utah, Washington and Weber counties.
- Children ages 0-2 years were observed for child safety seat use and children 2-10 years were observed for child safety seat OR safety belt use.
- Safety restraint use among children was observed for 40 minutes at 162 sites (27 sites per county).
- Only local roadways with speed limits of 40 miles per hour or less were selected for observation.
- The days of the week, time of day, direction of vehicle travel, and specific location chosen for observation were randomly selected.
- To assure both child restraint and safety belt surveys were not conducted on the same day, the days in which driver and front seat passengers belt use were being studied were excluded.
- Passenger cars, pickup trucks, vans, and sport utility vehicles were observed.
- All seating positions in the vehicle were eligible for observation if the surveyor could positively identify restraint use or non-use.

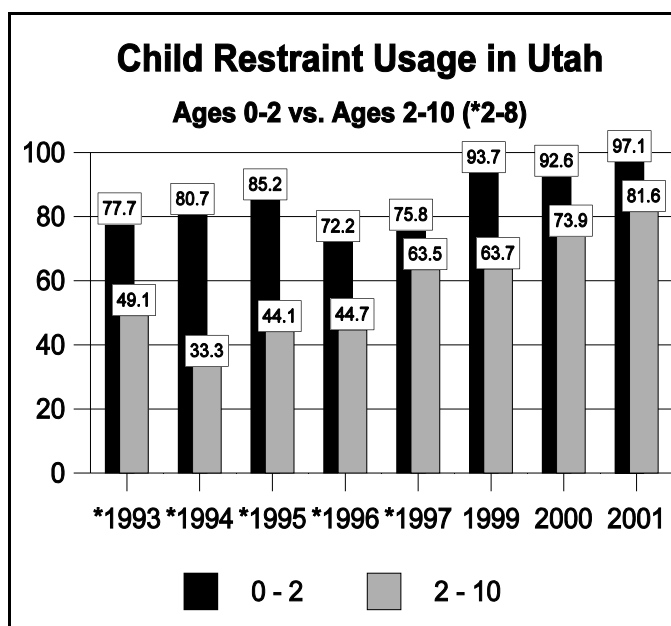


Figure 2

Results

Child restraint use was last studied in 2001. A child restraint survey was not conducted in 2002 due to time constraints. In 2001, safety restraint use for children ages 0-10 was **89.0%**. Further, it was found that **97.1%** of children under two years were restrained in a child safety seat, and **81.6%** of children ages 2-10 were restrained in a safety seat or seat belt (Figure 2).

As can be seen in Table 5, one county (Salt Lake) had a usage rate above the state's average. Further, all counties showed a decreased use of safety restraints among children 2-10 years when compared to children under 2 years of age.

Table 5: Child Restraint Use by Age - 2001			
County	0-2 Yrs	2-10 Yrs	0-10 Yrs
Cache	93.9%	83.2%	86.2%
Davis	96.2%	84.1%	88.7%
Salt Lake	98.0%	86.4%	90.2%
Utah	98.0%	84.6%	88.5%
Washington	97.3%	62.6%	72.9%
Weber	97.2%	78.8%	84.6%
OVERALL	97.1%	81.6%	89.0%

Table 6 provides for comparison of 2000 and 2001 child restraint survey results. All counties showed a statistically significant increase in usage rates or no statistically significant change. Two counties (Salt Lake and Washington) showed a decrease in usage rate, however, it was not considered statistically significant as reported by the statistician. Only one county showed a statistically significant decrease in usage among children ages 2-10 years and is marked by ; .

In addition, all counties show usage among children under the age of 2 years is higher than that of children ages 2-10 years of age. This is consistent with both state and national studies.

Table 6: Child Restraint Use by County and Age (2000-2001)			
County	Age	2000 Rate	2001 Rate
Cache	0-2 Yrs	98.8%	93.9%
	2-10 Yrs	72.5%	83.2%
Cache Total		79.5%	86.2%
Davis	0-2 Yrs	86.6%	96.2%
	2-10 Yrs	71.0%	84.1%
Davis Total		75.9%	88.7%
Salt Lake	0-2 Yrs	97.5%	98.0%
	2-10 Yrs	87.6%	86.4%
Salt Lake Total		90.7%	90.2%
Utah	0-2 Yrs	95.0%	98.0%
	2-10 Yrs	70.8%	84.6%
Utah Total		81.1%	88.5%
Washington	0-2 Yrs	90.8%	97.3%
	2-10 Yrs	70.0%	62.6% ;
Washington Total		75.1%	72.9%
Weber	0-2 Yrs	93.1%	97.2%
	2-10 Yrs	68.0%	78.8%
Weber Total		77.3%	84.6%
Grand Total		84.5%	89.0%

CONCLUSIONS

There was a statistically significant increase (+2.3%) in the use of safety belts from 2001 to 2002. There was also a marked increase in child restraint use (+4.5%) from 2000 to 2001.

Safety belt use among drivers and front seat passengers traveling on Utah roadways has increased from 77.8% in 2001 to 80.1% in 2002.

All six counties surveyed increased their usage rates from 2001 to 2002. Of the six counties surveyed, Davis county had the highest percentage of safety belt use, followed by Cache, Weber, Utah, Salt Lake and Washington counties.

Female drivers and front seat passengers were more likely to wear safety belts than their male counterparts. Females buckled up 85.0% of the time, whereas, 77.8% of males used safety belts.

Drivers and front seat passengers were more likely to wear seat belts while traveling on interstate roadways (85.8%) versus traveling on local roadways (76.5%).

Child passengers under the age of 10 years used safety restraints 89.0% of the time. However, usage decreases among older children. Only 81.6% of children between the ages of 2 and 10 used safety restraints, yet children under the age of 2 years used child safety seats 97.1% of the time.

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DATA ANALYSIS

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